

CLAIM AMENDMENTS

IN THE CLAIMS

This listing of the claims will replace all prior versions, and listing, of claims in the application or previous response to office action:

1. (Currently Amended) A method of determining the original amount of nitrogen in a gas mixture, the mixture also containing a least one hydrocarbon constituent, comprising the steps of:
 ~~disassociating nitrogen atoms;~~
 ~~disassociating hydrogen atoms from at least one hydrocarbon constituent;~~
 ~~associating nitrogen atoms with the hydrogen atoms, thereby producing ammonia;~~
 ~~measuring the ammonia; and~~
 ~~determining the amount of nitrogen, based on the amount of ammonia~~
 ionizing the gas mixture, by introducing energy into the gas using one of the
 following processes: subjecting the gas to a thermalizing electrical arc, subjecting the gas to
 a nonthermal plasma discharge, or subjecting the gas to a catalyst;
 controlling the amount of energy introduced into the gas, such that nitrogen atoms in
 the gas and hydrogen atoms from least one hydrocarbon constituent of the gas reform to
 ammonia;
 measuring the amount of ammonia in the gas; and
 estimating the original amount of nitrogen in the gas mixture, based on the amount of
 ammonia measured in the preceding step.

2. (Original) The method of Claim 1, wherein the gas mixture is a natural gas mixture.

3. (Original) The method of Claim 1, wherein the hydrocarbon constituent is methane.

4. (Cancelled)

5. (Cancelled)

6. (Currently Amended) The method of Claim 5, wherein the ~~nonthermal plasma discharge is controlled in energy~~ is controlled such that it is ~~sufficient to dissociate nitrogen atoms but insufficient to dissociate~~ ionize constituents having higher bond strength than that of nitrogen.

7. (Cancelled)

8. (Original) The method of Claim 1, wherein the measuring step is performed using infrared absorption techniques.

9. (Original) The method of Claim 8, wherein the infrared absorption is performed at a wavelength of 10.34 micrometers.

10. (Original) The method of Claim 8, wherein the infrared absorption is performed at a wavelength of 10.74 micrometers.

11. (Cancelled)

12. (Original) The method of Claim 1, further comprising the steps of repeating all steps for successive samples of the gas mixture.

13. (Original) The method of Claim 12, wherein the repeating steps are consistent with each other.

14-24. (Cancelled)

25. (New) The method of Claim 1, wherein the method is performed by routing the gas mixture through a nonthermal plasma discharge chamber followed by a nondispersive infrared absorption detection chamber.

26. (New) The method of Claim 1, wherein the estimating step is performed by correlation of the measured amount of ammonia to the original amount of nitrogen in the gas.

27. (New) The method of Claim 1, wherein the controlling step is performed such that substantially all of the nitrogen is reformed into ammonia.